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AUTHOR Stewart, Barbara C.
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ABSTRACT

To test the effect of library instruction on learning basic knowledge and skills in using reference tools, 33 Ball State University students received such instruction in a course on information resources in libraries. In control groups from basic literature courses, 39 students received course-related library instruction and 81 students received no instruction in library use. Students were pre-tested and post-tested using the Peagley Test, and responded to questionnaires for demographic information, previous library instruction, library use, and attitudes. Statistical analyses of mean test scores confirmed the hypothesis that students who have taken a course in library instruction will learn to use library reference tools more effectively than those who have not. Descriptive data revealed that previous library use and work experience had more effect on library ability than class level, subject majors or previous library instruction. The study concluded that students will benefit to a significant degree from taking a formal library instruction course. Further systematic and scientific research was suggested in library instruction evaluation, and in the development of a standardized library skills test. Bibliography and questionnaire are appended. (KP)

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AN EVALUATION OF A COURSE IN LIBRARY INSTRUCTION AT BALL STATE UNIVERSITY

A RESEARCH PAPER

SUBMITTED TO THE GRADUATE EDUCATIONAL POLICIES COUNCIL

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

for the degree

MASTER OF LIBRARY SCIENCE

by

BARBARA C. STEWART

ADVISER - MARINA E. AXEEN

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CHAPTER I

INTRODUCTION

Growth of Interest in Library Instruction

The sixties and seventies have witnessed an increasing interest in library instruction. At the national level, three committees have been established: the ALA Committee on Instruction in the Use of Libraries, the ACRL Bibliographic Instruction Task Force, and Project LOEX at Eastern Michigan University. At the state level, several clearinghouses of the same nature as LOEX are being established to transmit information on library instruction programs. Numerous conferences have been held since 1970: the Berkeley Conference in 1971 on formal courses, the six annual conferences on library orientation for academic libraries at Eastern Michigan University, and a conference on evaluation of library instruction programs held at the University of Denver in 1973, to name a few. Since 1971, over eight hundred thousand dollars from the Council on Library Resources and National Endowment for the Humanities has been awarded for the study and development of library instruction programs. Finally, in 1975, the ACRL Bibliographic Instruction Task Force published its recommendations or guidelines to be followed when developing a course in bibliographic instruction. These guidelines encourage the development and evaluation of individual programs. It is with this latter aspect that this research project has concerned itself.

Problem and Related Literature

"Library instruction" or more currently "bibliographic instruction" can be viewed as having passed through three distinct stages in its development: 1) the demonstration of a need for such instruction; 2) the devising of alternative methods of instruction to meet this need; and finally, 3) the need for scientific evaluation of the effectiveness of individual programs. While many studies have demonstrated the need for bibliographic instruction, and others have investigated the effectiveness of alternative methods of instruction when compared with each other, relatively few scientific investigations of individual programs have been attempted. This is the problem to which this project is addressed.

Richard Beeler described the situation in 1973 in the following manner:

> The current popularity of library use instruction, particularly in academic libaries, has seen the application of an impressive array of instructional methods and media to the task of user education. Recent surveys show closed circuit television systems, computers, synchronized slide/tape presentations, and a seemingly endless variety of additional audiovisual and print materials being used to teach students how best to utilize their available library resources. While questions have arisen concerning the relative effectiveness of these various approaches, formal evaluations of instructional programs have been surprisingly few.[1]

This lack of evaluative research is even more surprising when one considers that from 1967-1972, there were 309 citations under the heading "instruction in library use" in Library Literature Index. However, the emphasis in these articles has been on "how we do it in our library".[2]

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[1]Richard S. Beeler, Evaluating Library Use Instruction, (Ann Arbor: Pierian Press, 1975), p. VII.

[2]Arthur D. Young, "Research on Library-User Education: A Review Essay," in Educating the Library User, ed. John Lubans Jr. (New York: Bowker, 1974), p. 1.

While these articles have informational value on library instruction, they do not contribute much to the kind of research needed to make decisions on what will work best in any one situation.

This need for evaluation of individual programs has been of growing concern since 1970. In that year, Patricia Knapp, known for her evaluative studies of Knox College and the Montieth College Experiment, which she also developed, concluded:

> A major impression one receives from reviewing the literature on library service for undergraduate education is that a great deal more is said about what ought to be done than about what is actually being done. Further, there are many more plans, described in glowing terms, than there are reports on their implementation. Real evaluation of the effectiveness of new programs is almost non-existent.[3]

According to John Lubans, University of Colorado expert on library-use evaluation:

> Instructional programs in all types of libraries have been infrequently evaluated. Their need and effect have not been measured except in a few isolated cases. When measurement or evaluation has taken place it has been largely heuristic, that is, not scientifically established but useful nevertheless to explain observations made in library use instruction. There are few statistically valid studies, but these deal with methods of instruction rather than the success or lack of success on the part of the user in learning about information use.[4]

In 1971, in the Drexel Library Quarterly's "state of the art" report on library instruction, Patricia Henning called for more research in the area of library instruction:

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[3]Patricia Knapp, The Academic Library Response to New Directions in Undergraduate Education, (Washington D.C.: U.S. Office of Education, ed. 039, 390, 1973), p. 17.

[4]John Lubans Jr., "Evaluating Library User Programs," in Educating the Library User, ed. John Lubans Jr. (New York: Bowker, 1974), p. 232.

> Although there is almost unanimous agreement that college students should be instructed in the use of libraries and library materials, that body of knowledge identified as library science has not been enriched to any significant extent by the application of scientific principle to the development of general principles of library instruction. Periodically librarians have published reviews of the literature and conducted surveys of the nature and extent of instruction programs, but seldom has anyone gone on to define specific problems, formulate hypotheses, and then report back the findings in professional journals. There is no doubt that lack of research has seriously limited progress in library instruction.[5]

In 1973, in a paper presented before the University of Denver Conference on the Evaluation of Library Instruction, Tom Kirk discussed the question of why to evaluate library instruction programs. Kirk, Science Librarian from Earlham College, is well-known for his primary role in the development of course-related instruction and the evaluation of that instruction. He outlined, besides the obvious gains in improved instruction from scientific evaluation, four other positive results of evaluation: 1) The systematic collection of data provides better feedback than the more informal gut-feeling type of evaluation. 2) Such evaluation puts emphasis on objectives which focus on the learning process as well as student attitudes. 3) A third advantage of evaluation is that it provides a method or vehicle for accountability as justification for an educational program. 4) A fourth benefit is that it helps to learn from a previous programs mistakes, thus providing support for some general principles to serve as a basis in the development of new

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[5]Patricia A. Henning, "Research on Integrated Library Instruction," Drexel Library Quarterly, (July & October 1971), p. 339.

programs.[6] In the same year, in his paper: "Evaluation of Library Orientation and Instruction Programs: A Taxonomy," Kirk called for more evaluation of long term as well as short term objectives.[7]

In 1974, the call for evaluation of individual programs became more closely linked to the systems analysis approach of evaluation based upon a written set of behavioral objectives. Sara Lou Whildin, speaking before the Fourth Annual Conference on Library Orientation for Academic Libraries explains this idea in her paper entitled: "Planning a Library Instruction Program Based on Measurable Objectives."[8] This increased interest in evaluation of library instruction had its culmination in 1975 with the publication of "Toward Guidelines for Bibliographic Instruction in Academic Libraries" by the ACRL Bibliographic Instruction Task Force.[9] One of the primary purposes of this report was to stimulate research into whether existing programs are achieving stated objectives.[10]

In 1976, the need for evaluation of library instruction programs continues to be expressed. Most recently, at the Sixth Annual Conference

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[6]Thomas Kirk, "Bibliographic Instruction — A Review of Research," in Evaluating Library Use Instruction, ed. Richard J. Beeler (Ann Arbor: Pierian Press, 1975), pp. 1-2.

[7]Thomas Kirk, "Evaluation of Library Orientation and Instruction Programs: A Taxonomy," in Planning and Developing a Library Orientation Program: Proceedings of the Third Annual Conference on Library Orientation for Academic Libraries," ed. Mary Bolner (Ann Arbor: Pierian Press, 1975), p. 49.

[8]Sara Lou Whildin, "Planning a Library Instruction Program Based on Measurable Objectives," in Academic Library Instruction: Objectives, Programs, and Faculty Involvement: Proceedings of the Fourth Annual Conference on Library Orientation for Academic Libraries, ed. Hannelore Radar (Ann Arbor: Pierian Press, 1975), p. 17.

[9]"Towards Guidelines for Bibliographic Instruction in Academic Libraries." College and Research Libraries News 36 (May 1975): 137-40+.

[10]Ibid., p. 137.

on Library Orientation for Academic Libraries, a panel discussion included the following topics: a summary of the work being done at Austin, Texas to develop a standardized library skills test; a reminder from Tom Kirk that lacking a standardized test, systematic collection of data can still be carried out to evaluate content, products, process, student attitudes and cost-effectiveness of individual programs; and finally, the members of the panel from the University of Colorado stressed the need to learn as much as possible about research design through obtaining help from the research people in one's own university.[11]

A comment by Arthur Young, research associate with the Library Research Center at the University of Illinois, sums up the preceding discussion:

> We should not neglect the importance of developing and testing instructional programs that aim for high learner achievement levels.[12]

Since the need for evaluation of individual programs continues to exist, especially scientific evaluation which results from a systematic collection of data, it was decided to evaluate in such a way a new course in bibliographic instruction being offered through the Library Science Department at Ball State University. The emphasis in this project was on testing the effectiveness of the instruction with respect to content learning of basic knowledge and skills in using reference tools. The method involved the use of the pre-test-post-test technique with an experimental group having a formal course in bibliographic instruction

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[11]Information obtained from notes taken at the Sixth Annual Conference on Library Orientation for Academic Libraries held at Eastern Michigan University May 13-14, 1976.

[12]Young, "Research on Library User Education: A Review Essay." p. 10.

and three control groups receiving varying degrees of library instruction and experience. Included in the evaluation was an examination of student attitudes towards need for library instruction, the helpfulness of the instruction, and the ability of the test to test what they had learned in class. The method will be further described in Chapter III.

CHAPTER II

RELATED LITERATURE

The Need for Library Instruction

The related literature when viewed historically reveals: first, an identification of the need for library instruction; second, a response to this need with the development of alternative methods of instruction; and finally, third, in answer to the call for evaluation already reviewed above, reports of several studies attempting this evaluation. Another aspect covered in the related literature is the continuing discussion of testing for content learning and the use of the Feagley test to accomplish this.

The need for library instruction was identified as early as 1883 when the Annual Report of the President of Columbia University read:

> The average college student . . . is ignorant of the greater part of the bibliographical apparatus which the skilled librarian has in hourly use, to enable him to answer the thousand queries of the public. A little systematic instruction would so start our students in the right methods, that for the rest of their lives all their work in libraries would be more expeditiously accomplished . . . In fact, it is hardly an exaggeration to say that now students often . . . spend half their time in the library finding out what they don't want to know, and the remaining half in getting confused notions of what they do want to know.[13]

Again, in 1902, in an article on trends in university and college

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[13] Columbia University, Annual Report of the President, 1883, p. 46.

education, the need for library instruction is expressed:

> The equipment of the library will not be finished until it shall have upon its staff men and women whose entire work shall be, not the care of books, not the cataloguing of books, but the giving of instruction concerning their use.[14]

In 1934, Peyton Hurt's study "The Need of College and University Instruction in the Use of the Library" again pointed to the necessity of such instruction.[15]

However, though the need was expressed early by a few individuals the concept lacked wide concern until 1950. In a paper delivered recently before the "Sixth Annual Conference on Library Orientation for Academic Libraries," Tom Kirk suggested this inaction was due to two factors: the classical nature of undergraduate education before 1950, i.e., the reading of a selected list of "great books" rather than library research; and second, the size and complexity of the library before 1950, when the emphasis was on book collection as opposed to serials.[16]

More recent studies by Joyce (1961), Snider (1965) and Corlett (1969) demonstrate the need for library instruction in terms of the relationship of library skills to high scholastic grade-point averages.[17]

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[14]W.R. Harper, "The Trend of University and College Education in the United States," North American Review 174 (1902): 458.

[15]Peyton Hurt, "The Need of College and University Instruction in Use of the Library," Library Quarterly 4 (1934): 446-448.

[16]Thomas Kirk, "Course Related Library Instruction in the 70's," to be published in Proceedings of the Sixth Annual Conference on Library Orientations for Academic Libraries - Paper lent by Thomas Kirk. p. 5.

[17]W.D. Joyce, "Student Grades and Library Use: A Relationship Established," Library Journal 86 (February 15, 1961): 832-833.

Felix E. Snider. The Relationships of Library Ability to Performance in College (Ph.D. dissertation, University of Illinois, Ann

From another perspective, Perkins (1956) demonstrated with his study the extremely low scores received on a library skills test administered to thousands of graduating seniors at teachers colleges.[18] The need, as expressed by students themselves, can be viewed in the results of a recent user-survey at the University of Colorado. When students of all levels were asked whether the library should offer library-use instruction, all levels answered with over eighty percent in favor of such instruction. The freshmen and sophomores reported the highest percentages with ninety-two and ninety-five percent, respectively.[19]

Development of Alternative Methods of Library Instruction

The response to this expressed need for library instruction was the development during the 1950's of the library tour and orientation, or as it often turns out the "one-shot lecture" through English classes. However, when the studies of the early sixties revealed that these tours were an inadequate form of library instruction, not effecting increased student use of the library, they gradually become the "ghost of library instruction past."[20]

Arbor: University Microfilms, Inc., 1965) pp. 1-206.

Donna Jean Corlett, "Library Skills, Study Habits and Attitudes, and Sex as Related to Academic Achievement," Educational and Psychological Measurement 34 (Winter 1974): 967-969.

[18]Ralph Perkins, The Prospective Teacher's Knowledge of Library Fundamentals: A Study of the Responses Made by 4,170 College Seniors to Tests Designed to Measure Familiarity With Libraries (Metuchen, N.J.: Scarecrow Press, 1965), pp. 1-102.

[19]John Lubans Jr., "Evaluating Library-User Education Programs," in Educating the Library User, ed. John Lubans Jr. (New York: Bowker, 1974), p. 234.

[20]Millicent Palmer, "Library Instruction at Southern Illinois University, Edwardsville," Drexel Library Quarterly 7 (July & October 1971): 257.

During the sixties and into the seventies, new innovative methods have been developed including the formal course in bibliography.

A good summary of the various methods of orientation and instruction is provided in an article by Carla Stoffer and Gabriella Bonn.[21] They found the most common types of orientation, if more than a welcome, to be tours, either walk-through, self-guided or audio-visual in nature. As for method of instruction, they found that it is in one of the following forms: 1) instruction through existing courses, e.g., "course related" as developed at Earlham College; 2) the separate library course, usually for credit and elective, e.g., Bibliography I as developed by the University of California at Berkeley under the auspices of the Library School; 3) point of use instruction programs; 4) printed guides, e.g., "pathfinders" as developed by M.I.T.; 5) programmed or computer assisted instruction as developed at the University of Illinois and University of Denver. All of these programs have been found to meet particular needs of users. As Alice Clark, speaking in front of the Second Annual Conference on Library Orientation, concludes from a review of the literature and meetings:

> . . . many kinds of teaching methods should be employed to reach a varied community of students at varied levels of competency. . . . The best programs seem to combine a number of different students.[22]

In a similar fashion, Hannelore Radar concludes: "In order to

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[21]Carla J. Stoffle and Gabriella S. Bonn, "An Inventory of Library Orientation and Instruction Methods," RQ 13 (Winter, 1973): 129-33.

[22]Alice S. Clark, "Computer Assisted Instruction in Use of the Library: One Solution for the Large University," in A Challenge for Academic Libraries, ed. Sul H. Lee (Ann Arbor: Pierian Press, 1973), pp. 47-8.

develop an effective library instruction program, all types of instruction must be utilized."[23]

The Formal Course

In large universities, the separate course in bibliography is thought to have its place and be a definite inclusion in any library instruction program that hopes to reach as many library users as possible.[24] In 1974, the ACRL Bibliographic Instruction Task Force reported that the resurgence of the formal course in bibliography since 1970 was a result of the conference on formal courses held at the University of California at Berkeley in that year.[25] The task force reported, that in their survey, size did not seem to be a factor; out of twenty-eight libraries having a formal course, only fifteen had an enrollment of over 5,000.[26] At Berkeley, Asheville-Bilmore and San Jose, the courses stress learning by doing and learning search strategy.[27] These courses have had remarkable success in terms of student response.[28]

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[23]Hannelore B. Radar, "Formal Course in Bibliography," in Educating the Library User, ed. John Lubans Jr. (New York: Bowker, 1974), p. 283.

[24]Ibid.

[25]Thomas Kirk, ed. Academic Library Bibliographic Instruction: Status Report, 1972 (Chicago, Ill.: Association of College and Research Libraries, ED. 672823, 1973), p. 9.

[26]Ibid.

[27]James Kennedy, "Question: A Separate Course in Bibliography or Course-Related Library Instruction?" in Library Orientation: Papers presented at the First Annual Conference on Library Orientation, ed. Sul H. Lee (Ann Arbor: Pierian Press, 1972), p. 19.

[28]Anne B. Passarelli and Millicent D. Abell, "Programs of Undergraduate Libraries and Problems in Educating Library Users," in Educating the Library User, ed. John Lubans Jr. (New York: Bowker, 1974), p. 122.

This same resurgence in the formal course was also found by Dyson in a recent survey. He found fourteen out of twenty-eight programs included a credit course, that ten of those fourteen were begun in 1971 or later, and that, where there was a library instruction coordinator, these courses were not at the expense of other course-related instruction.[29]

The arguments in favor of the separate course are outlined by James Kennedy at the 1971 Eastern Michigan Conference. These include: it is full-scale and not superficial; students will resist using reference sources unless it is a course requirement; the course will equip students to use the library on their own in their major field, or for independent study. Similarly, Kennedy states the case against the separate course: it can be dull and seem like busy work, partly because it is unrelated to other course work; it will enlighten perhaps at most, the one percent who elect the course; and finally, most students do not feel that need for a course in bibliographic instruction until they have chosen their majors or minors and are really ready to do research into the literature of their major field.[30]

Anne Passarelli and Millicent Abell, in a discussion of undergraduate programs, point out that the formal course, while expensive, has the advantage of furnishing in-depth bibliographic instruction. In many cases, this can be tailored to each student's particular needs

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[29]Allan J. Dyson, "Organizing Undergraduate Library Instruction: The English and American Experience," Journal in Academic Librarianship (March, 1975), pp. 9-13.

[30]Kennedy, "Question: A Separate Course in Bibliography or Course-Related Library Instruction," p. 20.

and interests.[31]

Examples of Evaluative Studies

As of now, there has been no overall evaluation of a bibliographic instruction program for which the data has been published.[32] There are however, several studies evaluating different aspects of library instruction programs. A 1968 informal, unpublished study by Carey is documented by Lubans. Carey showed that students who had had library instruction had a mean on a library skills test fifteen percent higher than students the next year who were given no instruction.[33] The intent of this study, however, was not to evaluate the program of instruction, but to show that instruction made a difference.

The description by Marvin Wiggins of the evaluation of the programmed learning library instruction at Brigham Young University is one of the few reported evaluations of an individual program. While developing this library instruction program, students' needs were analyzed, behavioral objectiyes were written, and test evaluation questions based on the performance of these behavioral objectives were devised. The pre-test-post-test technique was used with three groups to analyze the learning of content. One of the groups received programmed instruction, another received nonprogrammed instruction, and a third received no instruction. The conclusions drawn from this evaluation are stated

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[31]Passarelli and Abell, "Programs of Undergraduate Libraries and Problems in Educating Library Users," p. 122.

[32]Kirk, "Bibliographic Instruction: A Review of the Research," p. 8.

[33]Lubans, "Evaluating Library-User Education Programs," p. 237.

by Wiggins:

> 1) it is possible to design effective library use instructional materials using instructional psychology techniques; 2) there was a slight but important advantage to the programmed learning approach in the study; and 3) the similarity of scores between pretest two and the posttest suggest the feasibility of using a fixed location posttest for the published version of the program.[34]

The description of the evaluation the AIMLO Project at Colorado State University provides another example of evaluation of an individual library instruction program. The AIMLO Project is based in the Reference Department of Clark Library and employs two units of sound/slide equipment and one unit of sound only equipment. There are three programs including: one explaining the use of periodical indexes, another describing the use of the card catalog, and a third explaining the use of the Monthly Catalog of U.S. Government Publications. In addition to use data obtained by a counter attached to the machines, questionnaires filled out voluntarily by the users, and telephone interviews, a short library-use quiz was administered to 502 students. The quiz was based on the AIMLO machine presentations and printed guides which were also available. The students were then divided into eight groups according to the type of exposure they had had to the instruction. The largest group had had no exposure and scored the lowest on the quiz. The students who had used "machines only" scored the highest. There was found to be a significant difference between the scores of those with no exposure

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[34]Marvin E. Wiggins, "A Scientific Model for the Development of Library Use Instructional Programs," in A Challenge for Academic Libraries, ed. Sul H. Lee (Ann Arbor: Pierian Press, 1973) p. 44.

and those who had used the machines.[35]

There are three thorough studies that provide a comparison of two or more methods of instruction. The earliest of these was a comparison of computer assisted library instruction with the traditional lecture course as evaluated by Marina Axeen at the University of Illinois. Axeen used the pre-test-post-test technique and administered the Feagley test to students in both groups. She found that students learned equally well from both kinds of instruction. In addition, she tested attitudes and found the attitudes of the computer assisted instruction group to be very positive towards this method of instruction.[36]

In a second study conducted at Earlham College, Thomas Kirk compared a printed programmed method of instruction with the lecture method, as part of course-related library instruction project in a Biology class. Using the pre-test-post-test technique, an examination of bibliographies, and attitude surveys, he found no significant difference between the two methods.[37]

Frank Kuo compared six versions of library instruction at Portland State University. Unlike the other two studies, he used only a post-test or in his words "criterion test" on the students after administration of

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[35]Betty Hacker and Richard Stevens, "Evaluating the AIMLO Project," in Evaluating Library Use Instruction, ed. Richard S. Beeler. (Ann Arbor: Pierian Press, 1975), pp. 51-7.

[36]Marina E. Axeen. "Teaching the Use of the Library to Undergraduates: An Experimental Comparison of Computer-based Instruction and the Conventional Lecture Method" (Ph.D. dissertation, University of Illinois, Ann Arbor: University Microfilmes, Inc. 1967), pp. 1-75.

[37]Thomas Kirk, "A Comparison of Two Methods of Library Instruction for Students in Introductory Biology," College and Research Libraries, 32 (November, 1971): 465-74.

the instruction. The groups receiving the instruction were selected at random from Science classes, and the six versions of instruction included: the library lecture, audio instruction, slide/audiotape instruction, television instruction, audiovisual instruction, and a control group receiving no instruction. Kuo concluded from his study that the most effective instruction was the self-paced audiovisual tutorial study followed by a summary and question/answer session with a librarian.[38]

Testing for Content Learning

One last element of the literature related to this project is the discussion of testing for content learning. The preceding studies used either the Feagley test or a locally developed test. According to a survey of over 100 colleges taken by Barbara Phipps in 1965, the so-called Feagley test or A Library Orientation Test for College Freshmen is the most popular test. The test has both norms and standards, and Phipps suggests it may be used not only for pre-testing, but on the local level, unannounced, for post-testing in order to make a comparison after instruction has been given.[39]

The test has received varying reviews as demonstrated in the Fifth- and Sixth Mental Measurements Yearbook:

> All in all, this test should go far in meeting the purposes set by the test authors: to discover to what extent and in what areas college freshmen need instruction in using the

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[38]Frank K. Kuo, "A Comparison of Six Versions of Science Library Instruction," College & Research Libraries 34 (July, 1973): 287-90.

[39]Barbara H. Phipps, "Library Instruction for the Undergraduate," College & Research Libraries 29 (September, 1968): 422.

> resources of the library, to help freshmen recognize their own deficiencies in the use of the library, and to provide data that can be used as a basis for a program of library instruction to meet the needs of the group tested.[40]
>
> Although the test has some shortcomings with respect to the reliability of diagnosing specific library usage skills because of the limitation of the number of exercises, the results would presumably be valuable to the librarian or teacher counseling the student about improving his specific abilities in using the resources of the library.[41]
>
> This reviewer agrees with the previous reviewers that this test is probably superior to an informal test constructed by a local librarian and that it would provide the librarian with some information regarding the areas and the extent to which college freshmen need instruction in the use of library resources. The authors have increased the instruments usefulness by supplying a table of norms and reliability data in the present edition of the manual; they are now urged to furnish validity in the next edition.[42]

Arthur Young terms these reviews less than enthusiastic and claims in his 1974 survey of research, that no published library test has undergone the rigorous evaluation required for complete standardization. He goes so far as to suggest:

> It may be debatable whether standardized tests of library knowledge should be constructed. An obvious problem is that a test designed for national application must necessarily be a compromise. On the other hand, it is probably a waste of staff resources to develop generally mediocre tests at the local level. And standardized tests provide an external criterion against which to gauge the results of local test administrations.[43]

Others have investigated the use of the Feagley Test. Patricia

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[40-42]See reviews "Library Orientation Test for College Freshmen, 1955," by Janet G. Afflerbach and J. Wayne Wrightstone in Oskar K. Buros, The Fifth Mental Measurements Yearbook (Highland Park, N.J.: Gryphon Press 1959), pp. 787-9; and review by Morey J. Wantman, in Buros, The Sixth Mental Measurements Yearbook (Highland Park, N.J.: Gryphon Press, 1965), p. 1144.

[43]Young, "Research on Library-User Education," p. 7.

Knapp found a high correlation between her task performance evaluation in the Montieth College Project and the Feagley Test. She concluded that the use of such a test is justified wherever a gross measure of fairly elementary library knowledge and skill is required.[44]

Masse Bloomfield in his discussion of testing concludes: the Feagley Test is still the most popular instrument, the test is satisfactory to most college librarians for testing first-year college students, the test has a liberal arts and humanities background, and finally, the most questionable part of the test is the portion on abbreviations. He suggests there may be little reason why first-year college students should be tested on library skills with questions dealing with abbreviations.[45] The fact that the test was used in this study to test content of learning of basic reference tools and skills will hopefully minimize the weaknesses of the test. Since the abbreviations were not part of the course studied in this project, it was possible to analyze the test results in subsets and thereby show a comparison of knowledge gained between the section of the test for which instruction was given and the section (abbreviations) for which no instruction was given. This technique will be further explained in the discussion of the method.

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[44]Patricia B. Knapp, The Montieth College Library Experience (New York: Scarecrow Press, 1966), p. 71.

[45]Masse Bloomfield, "Testing for Library-Use Competence," in Educating the Library User, ed. John Lubans Jr. (New York: Bowker, 1974), p. 222.

CHAPTER III

RESEARCH METHOD

Hypothesis and Scope

The hypothesis which guided the design for this study was: Ball State students, who have taken Information Resources in Libraries (LIB 133), will use library reference tools more effectively than those who have not had the course, because the course will have provided them with the knowledge necessary to use these reference tools. The scope of the study covered a time period extending from the first week in Spring Quarter (March 8) to the last week in Spring Quarter (May 14).

Definitions

For purposes of this study, "reference tools" included in addition to encyclopedias, dictionaries, and other basic reference works, the card catalog and periodical indexes. For a specific list of reference tools included on the Feagley Test, see the description of the test which follows this section. The ability of the group with library instruction to use reference tools more effectively was determined by the administration of the Feagley library skills test. The correlation between this test and basic task performance skills has already been discussed (See footnote 44). It was assumed the class with the formal course would score significantly higher on this test after the instruction, especially since the main emphasis in this course was on basic reference

knowledge and skills and this is what the test has been found to measure.

Description of Feagley Test

The Feagley Test or A Library Orientation Test for College Freshmen is comprised of the following parts:

Part I. Defintion of terms, e.g., annotation, atlas, bibliography.

Part II. Interpretation of information on a catalog card.

Part III. Choice of subject headings in the card catalog.

Part IV. Arrangement of headings in the card catalog.

Part V. Literature reference works.

Part VI. Sources of biographical information.

Part VII. Choice of indexes.

Part VIII. Interpretation of information in periodical indexes.

Part IX. Abbreviations.

The 1955 edition of the Feagley Test represents the third revision of the test. This edition includes in the manual a table of norms and a discussion of the reliability coefficient. At the present time there is no data available for carrying out statistical validation studies, but according to the manual, there is indication of rational validity.

Population

The students involved in this research project were those enrolled for Spring Quarter in two classes of Information Resources in Libraries (LIB 133), four classes of Literature and Composition (ENG 104) and two classes of World Literature (ENG 205).

Description of Classes

Information Resources in Libraries (LIB 133) is a new course being offered by the Library Science Department. As its official title: Information Resources in Libraries indicates, it is a course about sources of information in not just Ball State's Bracken Library, but in academic libraries in general. It is hoped that by stressing libraries instead of one library, the student will keep in mind that what he is learning will be applicable to any research problem which he may have in any library in the future.[46] What the title does not indicate about course content is explained by the terminal objectives, i.e., the emphasis upon the student developing the skills necessary to locate and use reference materials effectively. Enabling objectives include: 1) To be able to identify the most essential information sources in libraries. 2) To be able to demonstrate skill in the use of the card catalog. 3) To make effective use of printed bibliographies. 4) To compile a simple bibliography on a subject of the student's choice using several essential elements found in all proper bibliographic citations.[47] Each instructor is free to place his own choice of emphasis on these objectives and use them as flexible guidelines.

The Information Resources in Libraries (LIB 133) classes used for this project were taught by Neal Coil, former Head of Ball State's Reference Department, who now teaches graduate and undergraduate reference courses. In an interview with Coil, it was ascertained that he places emphasis on three sections of the course. First, he spends a

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[46-47] From Interview with Neal Coil.

great deal of time on teaching basic skills in using the card catalog, dictionaries, encyclopedias and periodical indexes. Second, he stresses the importance of learning and employing "search strategy." This "search strategy" involves moving from the general to the specific reference tools, i.e., encyclopedias and bibliographies first before indexes and the card catalog. Making use of the reference intermediaries in any search to more closely define the problem and help with the development of subject headings is always encouraged. The third emphasis is with respect to the subject areas that the students in the class have as majors or as areas of interest. They are asked to state these at the beginning of the course. Throughout the quarter, the students are encouraged to bring their research problems from other courses, and these are worked on in class as well as outside of class with Coil. This helps to make the instruction as course-related as possible, an objective set forth by the ACRL Task Force's "Towards Guidelines for Bibliographic Instruction in Academic Libraries." Coil attempts to create as much as possible a laboratory situation through the use of transparencies and through holding classes in the Library Science Library. The text used is Guide to the Use of Libraries by Gates. With the transparencies, Coil stresses the "existence", the "characteristics" and the "application" of each reference work. He believes the students' knowledge of the existence and application of reference works such as Winchell is invaluable.

The students sign up for Information Resources in Libraries (LIB 133) for several reasons. Some are motivated by an interest in how to use the library. Others are minoring in Library Science and need it

for certification. For yet others it satisfies the General Studies requirement. Then, there are those who take it because their counselor told them to, but these are few in number. Counselors are encouraged to recommend it to those students who will be having research projects during the quarter.

The evaluation of the class by the instructor includes content evaluation through objective quizzes and tests written by the instructor. Product evaluation is accomplished through evaluation of the bibliography or as happened in Spring Quarter, a take-home mid-term and final involving search strategy and actual use of reference tools. Attitude evaluation is carried out on an irregular basis through the administration of a university-wide test. During Spring Quarter, it was not administered.

The Literature and Composition (ENG 104) classes are part of the required sequence of courses in the English Department. The instructors of the four classes (two classes each), who cooperated in this project, were Larry Chott and Richard Jennings. These classes were chosen, because in this course the students are required to do a research paper. The amount of library instruction help given the students depends entirely on each instructor. With the approval of Dr. Dick Renner, English Department Chairman, it was possible to get the cooperation of Chott in not giving his students any instruction. He agreed to this with regret, because of his interest in the students learning to use the library. He usually gave them a library work sheet, but agreed to withhold this for purposes of this study. He assigned them a research topic, and then left them on their own to work it out.

In order to have another group with a different experience from the group with no instruction and yet without an in-depth course in bibliography, Jennings agreed to have a one-hour library tour by one of the reference librarians, Alice Hoover. Hoover has had many years experience giving these tours. Beyond this one-hour tour, Jennings worked approximately six hours with each of the two classes in the library and in his office. The amount of help given per student depended on need and request by the student. During these tutoring sessions, Jennings tried to teach the students search strategy. His preparation included reading several books on teaching the use of the library and an avid interest in his students learning to use the library.

World Literature (ENG 205) is a course in literature with all of the reading assignments being made from the text. The instructor for these two classes was Dr. Robert Evans, and he assured the researcher that no mention of the library would be made. This was important, because not only were these students to be part of the control group with no instruction, but they were to be used to rule out the possibility that students might gain as much knowledge of library skills through one more year of college as they would have gained in the formal course.

Procedures

For purposes of statistical analysis, the groups in this study were designated as follows:

EXPERIMENTAL GROUP (Gr-1) - with a formal course in library instruction
Information Resources in Libraries (LIB 133)

CONTROL GROUPS (Gr-2) - with course-related instruction
Literature and Composition (ENG 104)

(Gr-3) - with no library instruction
Literature and Composition (ENG 104)

(Gr-4) - with no library instruction
World Literature (ENG 205)

Groups 1-4 were pre-tested in the first week of Spring Quarter and post-tested in the last week of Spring Quarter. The tests were administered by the researcher with the brief explanation that this was a research project. The students had no prior knowledge that they would be either pre- or post-tested. They were guaranteed anonymity with respect to results from the test. The tests were hand-corrected by the researcher, and after the initial data was gathered, the students were given an identification number to be used for the computer program. Table 1 shows the number of students in each group who began and completed the project. There were 24 students excluded from the study due to one of the following reasons: did not finish the test, missed the post-test, and in one instance, a reading disability was established, so the student was excluded.

TABLE 1

PRE-TEST AND POST-TEST POPULATION BY GROUPS

	Pre-test	Post-test
Gr-1	33	29
Gr-2	39	32
Gr-3	41	37
Gr-4	40	31
TOTAL	153	129

Along with the pre-test, students filled out a questionnaire (See Appendix) which indicated age, sex, class level, subject major, previous library instruction or orientation in high school, at the public library, and at Ball State's libraries and previous use of high school, public and Ball State libraries. The students were also questioned about their need for library instruction and previous experience working in a library. Cumulative grade point averages were obtained by the researcher through the records department at Ball State University.

During the post-test period, the students in groups 1-4 were asked if they had had any other library instruction during the quarter. In addition, the experimental group (Gr-1) and the control group with course-related instruction (Gr-2) were asked two other questions: if the instruction had helped them in their ability to use the library, and if the test had tested what they had learned in the course.

After the data from the pre-tests, post-tests and questionnaires were collected, it was transferred to data sheets to be converted into data cards in order that analysis could be carried out at the computer center. While correcting the tests, the researcher became aware that the students were not showing as much improvement on the abbreviations portion of the test. Since abbreviations were not part of the instruction for the course, it was decided to include in the data for analysis the subset scores for the two parts of the test: the parts for which there had been instruction (Parts I-VIII) and the part on abbreviations for which there had been no instruction (Part IX). If this theory proved correct, it would make further statement about the effectiveness of the instruction possible. Help with the research design was obtained from Dr. Terry Schurr, Assistant Director of Research at Ball State University.

CHAPTER IV

ANALYSIS OF DATA

Analysis and Presentation of Data

An analysis of covariance was performed on the data in order to control for differences due to having used intact groups. The control variables were sex, grade point average and pre-test. Sex and grade point average have already been discussed as primary variables in connection with library use ability. (See footnote 17). The criterion was the post-test scores.

Table 2 presents a group means for grade point average, pre-test scores, post-test scores, pre-subset scores (Pre-S and Pre-O), post-subset scores (Pos-S and Pos-O) and the adjusted post-test group means. The means were adjusted through the use of covariates grade point average, sex and pre-test.

Table 3 summarizes the results of the analysis of covariance comparing the adjusted post-test group means of all four groups. The data indicate that when the grade point average, sex, and pre-test scores were controlled and held constant, the post-test scores of the experimental group (Gr-1) were significantly higher than the post-test scores of the control groups (Gr-2, -3, and -4). An F-ratio value of 6.182 with 3 and 122 degrees of freedom exceeded the required 3.194 level to be significant at the .01 level of confidence. In other words, the difference between the experimental group and the control groups was such that it could have

TABLE 2

GROUP MEANS AND ADJUSTED GROUP MEANS

	GPA	Pre-test Mean Scores	Post-test Mean Scores	Pre-S (Pre-subset Mean Scores Parts I-VIII)	Pre-O (Pre-subset Mean Scores Part IX)	Pos-S (Post-subset Mean Scores Parts I-VIII)	Pos-O (Post-subset Mean Scores Part IX)	Adjusted Post-test Mean Scores
Gr-1	2.87	53.72	58.69	48.28	5.45	53.79	5.24	54.37
Gr-2	2.73	42.00	46.38	38.56	3.44	42.94	3.50	51.22
Gr-3	2.83	50.14	50.89	45.51	4.57	46.38	4.32	49.44
Gr-4	2.69	47.55	48.19	43.25	4.25	43.74	4.45	48.96

occurred by chance less than one time in a hundred. The difference favored the experimental group and the research hypothesis was supported.

TABLE 3

SUMMARY OF ANALYSIS OF COVARIANCE COMPARING THE ADJUSTED POST-TEST GROUP MEANS

Source	Adjusted Sums of Squares	df	Mean Squares	F
Between	517.2578	3	172.4193	6.1821
Within	3402.5766	122	27.8900	

A t-test of independent measures was also used to determine significant differences between the adjusted mean comparisons. Table 4 summarizes the results of a t-test for contrasts in adjusted group means. The t-test of independent measures comparing the adjusted post-test means of the experimental group (Gr-1) with the average of the adjusted post-test means of the three control groups (Gr-2, -3, and -4) yielded a t-value of 3.711. This value of 3.711 with 1 and 124 degrees of freedom

TABLE 4

t-VALUE FOR COMPARISON OF ADJUSTED POST-TEST GROUP MEAN OF GR-1 WITH COMBINED ADJUSTED GROUP MEANS OF GR-2, GR-3, GR-4

t-value	3.71	>.01
df	1.124	
2.617 = .01		

exceeded the 2.617 level necessary to be significant beyond the .01 level of confidence. The hypothesis that the group with library instruction would learn to use library tools more effectively as shown by scoring significantly higher on a library skills test is supported.

Related Findings

A related finding demonstrating the effectiveness of the instruction for the experimental group with library instruction was determined from an analysis of the subset mean test socres (Pre-S, Pre-O, Pos-S, and Pos-O and Table 2). These subset mean scores represent the pre-test and post-test means of the group scores on Parts I-VIII (Pre-S and Pos-S and the pre-test and post-test group mean scores on Part IX (Pre-O and Pos-O). Because the abbreviations part of the Feagley Test (Part IX), is generally considered the weakest part, and because abbreviations were not part of the material taught for either group receiving library instruction, the researcher decided to compare the gains made on the first eight parts of the test (Pre-S to Pos-S) with the gains made on the abbreviations part (Pre-O to Pos-O). Greater gains on the first eight parts, for which instruction was given, would suggest that the instruction had been effective. An examination of the subset means scores in Table 2 supports this conclusion. The experimental group with library instruction (Gr-1) went down on the abbreviations part of the test by 0.2 of a point: the total gain for this group (approximately 5 points) was on the first eight parts of the test. The only other group making a significant gain from pre-test to post was the group receiving course-related instruction. This group also made most of its gain on the first eight parts of the test, 4.37 points as compared to a gain of 0.07 for

the abbreviations part of the test. This comparison would seem to indicate that the instruction tested by the first eight parts of the test was effective to a measurable degree.

Descriptive Data Results

The data presented in this section, while not useful for the statistical analysis for this project, is useful to describe the differences in the groups with respect to the following factors: class level; subject major; previous library instruction in high school, at the public library, and at Ball State; previous use of high school, public and Ball State libraries; the students' feelings about their need for library instruction; and previous work experience in a library. The students in Gr-1 and Gr-2, the two groups receiving library instruction, were also asked during the post-test period if the instruction had helped them in their ability to use the library, and if the test tested what they had learned in the course. All students in all groups were asked on the post-test if they had had any other library instruction during the quarter. The following includes a brief analysis of the answers to the questions asked above. Each analysis will be accompanied by a table illustrating the results.

1. What is your status at BSU?

Class level did not appear to be significant factor for determining how well the students did on either the pre-test or post-test. (See Table 5). Gr-4 with the largest percentage (61.3%) of students at the sophomore level or above had the lowest pre- and post-test scores. This would seem to rule out a history factor, i.e., that more years of college would have the same results as a formal course in library instruction

in terms of the student's knowledge about library use.

TABLE 5

CLASS LEVEL

	Freshman	Sophomore	Junior-Senior
Gr-1	51.7	34.5	13.6
Gr-2	100.0		
Gr-3	78.4	18.9	2.7
Gr-4	38.7	38.7	22.6

2. What is your major field of study?

The composition of the groups with respect to major subject areas were quite varied. (See Table 6) Over fifty percent of the students in Gr-1 listed either humanities (34.5% or education (24.1%) as their major subject area. The largest percentage of Gr-2 (43.8%) were business majors. Over fifty percent of Gr-3 were either education majors (27.8%) or "other" (2.5%) meaning nursing, architecture, or engineering. The largest percentage of Gr-4 were business majors (41.9%). Since the Feagley test has a humanities emphasis (See footnote 45), it might have been expected that students with a humanities subject major would do better as Gr-1 did.

3. Did you have any library orientation or instruction in high school?

High school library orientation or instruction seems to have had little effect on how well the students did on the pre-test (See Table 7). Gr-1 with the lowest percentage of students having high school library

TABLE 6

MAJOR SUBJECT AREA

	Humanities	Social Science	Science	Business	Education	Other
Gr-1	34.5	10.3	6.9	6.9	24.1	17.2
Gr-2	3.1	6.3	3.1	43.8	18.8	25.0
Gr-3	11.1	5.6	16.7	13.9	27.8	25.0
Gr-4	3.2	12.9	9.7	41.9	25.8	6.5

instruction scored the highest on the pre-test. This is probably because from the description of the students, the instruction was usually no more than a brief orientation or tour.

TABLE 7

HIGH SCHOOL INSTRUCTION

	No	Yes
Gr-1	62.1	37.9
Gr-2	40.6	59.4
Gr-3	37.8	62.2
Gr-4	51.6	48.4

4. Did you have any library orientation or instruction at the public library in your city?

Over ninety percent of all groups had no public library instruction or orientation. (See Table 8) With respect to this factor, the groups were homogenous, and it can be concluded that this factor had little influence on the test scores.

TABLE 8

PUBLIC LIBRARY INSTRUCTION

	No	Yes
Gr-1	93.1	6.9
Gr-2	90.6	9.4
Gr-3	97.3	2.7
Gr-4	96.8	3.2

5. Have you had any library orientation or instruction at BSU?

Over ninety percent of the first three groups (Gr-1, Gr-2, Gr-3) had had no library orientation or instruction at Ball State University. (See Table 9) However, twenty-nine percent of the students in Gr-4 had had such instruction. Since the students in Gr-4 scored the lowest on the pre-test, it would seem that this instruction had had little effect on their scores on the test. Probably, this is because what has been offered up to this year and discontinued because of its lack of value, is the "one-shot" lecture tour or as previously described the "ghost of library instruction past". (See footnote 20)

TABLE 9

BSU LIBRARY INSTRUCTION

	No	Yes
Gr-1	93.1	6.9
Gr-2	90.6	9.4
Gr-3	97.3	2.7
Gr-4	71.0	29.0

6. How often did you use your high school library?

High school library use seemed to have a higher correlation with scores of the groups on the pre-test. (See Table 10) While approximately twenty-five percent of all students in the control groups (with lower scores on the test) used their high school libraries more than once a week 41.4% of the experimental group (with higher pre-test scores) used their high school libraries more than once a week.

TABLE 10

HIGH SCHOOL LIBRARY USE

	Very Seldom Or Never	A Few Times Each Semester	Once Every Two Weeks	Once a Week	More Than Once a Week
Gr-1	6.9	10.3	17.2	24.1	41.4
Gr-2	15.6	28.1	15.6	15.6	25.0
Gr-3	8.1	40.5	5.4	18.9	27.0
Gr-4	12.9	35.5	12.9	16.1	22.6

7. How often did you use the public library in your city?

Only a very small percentage of the groups used the public library more than once a week. (See Table 11) Gr-1 showed the most frequent use with 17.2% using the public library more than once a week as compared to 3.1%, 0.0%, and 3.2% of the three control groups, respectively.

8. How often do you use the BSU libraries?

The groups were more similar with respect to use of the Ball State Library, although the experimental Gr-1 had the highest percentage at the most frequent use level. (See Table 12) The exception was Gr-2

TABLE 11

PUBLIC LIBRARY USE

	Very Seldom Or Never	A Few Times Each Semester	Once Every Two Weeks	Once a Week	More Than Once a Week
Gr-1	20.7	41.4	10.3	10.3	17.2
Gr-2	40.6	46.9	9.4	0.0	3.1
Gr-3	48.6	45.9	5.4	0.0	0.0
Gr-4	41.9	35.5	9.7	9.7	3.2

which had only 9.4% using the library more than once a week. This group also had the lowest pre-test and post-test scores, again suggesting a relationship between library use and library ability.

TABLE 12

BALL STATE LIBRARY USE

	Very Seldom Or Never	A Few Times Each Semester	Once Every Two Weeks	Once a Week	More Than Once a Week
Gr-1	3.4	37.9	24.1	3.4	31.0
Gr-2	15.6	56.3	12.5	6.3	9.4
Gr-3	13.5	48.6	5.4	5.4	27.0
Gr-4	3.2	41.9	19.4	6.5	29.0

9. Have you worked in a library?

Approximately ten percent of the control groups (Gr-1, -2, and -3) had had experience working in a library as compared to twenty percent for the experimental group (Gr-1). (See Table 13) It is impossible to say to what degree, if any, this greater percentage could have effected

higher scores on the test. It does indicate a difference in the groups on this point.

TABLE 13

LIBRARY WORK EXPERIENCE

	No	Yes
Gr-1	79.3	20.7
Gr-2	90.6	9.4
Gr-3	91.9	8.1
Gr-4	90.0	10.0

10. Do you feel you need library instruction?

The most remarkable finding from the answers to this question is the fact that approximately seventy-four percent of all the students felt they needed library instruction. (See Table 14) It is noteworthy that feeling a need for library instruction seemed not to be determined by prior library use knowledge; the groups with the highest and lowest pre-test scores (Gr-1 and Gr-2) were the groups with the highest percentage of students who said they felt a need for library instruction (89.7% and 90.3%, respectively).

11. Did this course help you in your ability to use the library?

This question was answered by the two groups with library instruction (Gr-1 and Gr-2). A large majority of both groups indicated they found the instruction helpful; however, 96.5% of the experimental group with the formal course (Gr-1) found the instruction helpful or somewhat helpful in contrast to 78.1% of the course-related instruction

TABLE 14

NEED FOR LIBRARY INSTRUCTION

	No	Yes
Gr-1	10.3	89.7
Gr-2	9.7	90.3
Gr-3	37.8	62.2
Gr-4	41.9	58.1
TOTAL	25.8	74.2

group. (See Table 15) This would seem to indicate that the formal course in library instruction was more satisfying to the students, although it might be expected that the degree of satisfaction would be higher for those students who had elected the instruction.

TABLE 15

HELPFULNESS OF LIBRARY INSTRUCTION

	No	Yes	Somewhat
Gr-1	3.4	86.2	10.3
Gr-2	21.9	78.1	

12. Did this test test what you learned in the course?

Fifty percent of the students with the course-related instruction believed that the test had tested what they had learned from the library instruction given. (See Table 16) This is in contrast to 82.8% of the experimental group found that the test tested at least somewhat the

material covered in the course. They were however, much more discriminating in their choice between "yes" and "somewhat", probably due to the fact, that having had a formal course, they were much clearer about the material covered. Course-related instruction tends to become more specific and project oriented.

TABLE 16

ABILITY OF FEAGLEY TEST TO TEST MATERIAL LEARNED IN COURSE

	No	Yes	Somewhat
Gr-1	17.2	48.3	34.5
Gr-2	50.0	50.0	

When students in all groups were asked at the end of the quarter if they had had any other library instruction during the quarter, the answer was "no" for all students.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary and Conclusions

There has been an increasing interest in library instruction since about 1950. This is evidenced by the number of conferences held, articles written and committees established to convey information on the topic of library instruction. While there has been substantial evidence of the need for library instruction, and considerable effort expended in developing alternative methods of instruction, the problem of only a few formal evaluations of individual library instruction programs remains.

There are many aspects of library instruction programs to be evaluated, i.e., content, product, process, attitudes and costs. This project attempted an evaluation of the content learning of a formal course in bibliographic instruction at Ball State University. The specific hypothesis tested was: Those students who have had a course in library instruction will have learned to use library reference tools more effectively than those who have not had the course, because the course will have provided them with the knowledge necessary to use these tools. The criteria for determining "more effective use of reference tools" for this project was a significantly higher post-test mean score on the Feagley library skills test for those students who had the course in library instruction when compared to the combined mean

post-test scores of the three control groups.

The research design for testing this hypothesis involved the use of the pre-test-post-test technique with the Feagley test being administered to all groups at the beginning and end of a ten-week quarter. The groups included: an experimental group with a formal course in library instruction and three control groups consisting of classes from the English Department. Two of the control groups were composed of students taking a course for which the students must do a research paper. One of these groups was given some course-related instruction by a reference librarian and the instructor for the course; the other group received no instruction at all. The third control group was composed of students taking a literature course, and these students were also given no instruction and had no specific research project to do for the class. The majority of the students in this group were sophomores, juniors, and seniors, and besides offering further comparison with the experimental library instruction group as a group without any library instruction, this group served the function of ruling out a "history factor", in other words ruling out the possibility that another year of college would have done as much as a formal course to increase the students' library use ability.

The students in all groups also filled out questionnaires during the pre-test and post-test periods designed to determine differences in background factors such as sex, class level, subject major, previous library instruction, and library use as well as their attitudes toward their own need for library instruction, the helpfulness of the instruction received and the ability of the Feagley test to test what they had

learned from the library instruction. Grade point averages were obtained from the records office at Ball State University.

The statistical analysis for the project involved an analysis of covariance performed on the adjusted post-test means of all groups. The means were adjusted by the covariates of sex, grade point average and pre-test mean scores. This technique was used to diminish differences in the groups derived from the necessity of using intact groups. An F-ratio value of 6.182 with 3 and 122 degrees of freedom exceeded the required 3.194 level to be significant at the .01 level of confidence. The difference favored the experimental group and the hypothesis was supported. Further analysis using a t-test of independent measures yielded a t-value of 3.711 for the experimental group when their adjusted post-test mean score was compared with the combined adjusted post-test mean scores of the other three control groups. This t-value of 3.711 with 1 and 124 degrees of freedom exceeded the 2.617 level necessary to be significant beyond the .01 level of confidence, again confirming the hypothesis that the group with library instruction would learn to use library tools more effectively than those not having the instruction as demonstrated by significantly higher scores on the Peagley library skills test.

A related finding demonstrating the effectiveness of the instruction was obtained by comparing the gains made on the parts of the test for which instruction was given (Parts I-VIII) with the gains made on the part of the test for which no instruction was given (Part IX--the abbreviations). This analysis revealed that in fact, the experimental group experienced a loss on the abbreviations portion of the

test. The entire gain was on that part of the test for which there had been instruction, thus suggesting that the instruction had been effective to a measurable degree.

The descriptive data revealed that background factors of class level, subject majors, and previous library instruction did not seem to have had as much effect on library ability as factors such as previous library use and library work experience. Approximately seventy-five percent of all students believed they needed library instruction, and a majority of both the groups receiving instruction found it helpful. The degree of satisfaction with the Feagley test's ability to test what the students had learned from the instruction was much greater for those with the formal course. This probably indicates that the objectives of the test came closer to those in the formal course where the emphasis was on basic tools and skills, while the course-related instruction was more specific and project oriented. However, since the group with course-related instruction skill had the lowest post-test mean scores, it is possible they would have benefited more if they had had more basic instruction.

The major conclusion to be drawn from the findings of this study is that students will benefit to a significant degree from taking the formal course Information Resources in Libraries. The course-related instruction group in this study, while making gains from pre-test to post-test, (See Table 2) probably would have made greater gains had the emphasis been on basic skills. The low post-test score of this group would indicate the need for this emphasis, although the majority of students expressed gratitude for the instruction received. The related

findings of the study with respect to the gains made by the students on the parts of the test for which there was instruction as compared to the loss in scores experienced on the part of the test for which there was no instruction, supports the conclusion that the instruction given in the formal course Information Resources in Libraries was effective. It also supports the contention that the abbreviations portion of the Feagley test is weak, and unless specific instruction is given, students will not learn the abbreviations.

Limitations and Need for Further Research

There are several limitations to this study. The research design required the use of intact groups, thus threatening the internal validity of the study and making it impossible to generalize from the findings. However, every effort was made through the use of a covariant analysis to diminish this threat, and it is possible to conclude that the students did make significant gains from the formal course in library instruction. Another limitation of this study is that it evaluates only the content learning and attitudes of the students toward the instruction. Further research should be carried out comparing the bibliographies produced by the experimental and control groups, and the processes involved in developing the bibliographies. Attitudes should also be examined in greater depth.

A final limitation was the necessity of using the Feagley test, which for the most part tested what the students had learned in the formal course. Of course, it did not test the depth of the information presented, nor did it cover all the reference sources presented in the course. However, it was used because it comes the closest to a

standardized test for library ability and was thought to be better than a locally developed test for determining library ability. (See footnote 43) Further research should be conducted to develop a standardized library skills test.

With all these limitations, it is hoped that this systematic collection and analysis of data has shown that this formal course in library instruction is justified as an educational program for teaching students the use of the library.

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APPENDIX

Questionnaire

The purpose of this questionnaire is to determine the extent of your past and present experience with libraries. Please answer each question carefully, and where two answers are correct, check both. This is not a test, and all information will be kept strictly confidential and anonymous.

1. Name_____ Male____ Female____ Age____

2. What is your status at BSU?
   a. ____Freshman
   b. ____Sophomore
   c. ____Junior
   d. ____Senior
   e. ____Master's Program
   f. ____Doctoral Program
   g. ____Other (Please specify) _____

3. What is your major field of study? (If more than one please indicate)
   a. ____Humanities
   b. ____Social Sciences
   c. ____Sciences
   d. ____Business
   e. ____Education
   f. ____Other (Please specify) _____

4. Did you have any library orientation or instruction in high school?
   ____yes
   ____no
   If yes, please describe briefly_____

5. Did you have any library orientation or instruction at the Public Library in your city?
   ____yes
   ____no
   If yes, please describe briefly_____

6. Have you had any library orientation or instruction at BSU?
   ____yes
   ____no
   If yes, please describe briefly_____

7. How often did you use your high school library?
   a. ____more than once a week
   b. ____once a week
   c. ____once every two weeks
   d. ____a few times a semester
   e. ____very seldom, or never

8. How often did you use the Public Library near your home?
   a. ____more than once a week
   b. ____once a week
   c. ____once every two weeks
   d. ____a few times a semester
   e. ____very seldom, or never

9. How often do you currently use the BSU Libraries?
   a. _____more than once a week
   b. _____once a week
   c. _____once every two weeks
   d. _____a few times a quarter
   e. _____very seldom, or never

10. Have you worked in a library?
    _____yes (Please describe briefly)_____
    _____no

11. _____Do you feel you need some instruction in the use of the library?
    _____yes
    _____no